

### REMARKS

Claim 4 has been amended without being narrowed to correct a minor informality. Claim 13, 18 and 20 have been amended to further patentably distinguish the invention from the prior art. Claims 29 and 30, have been canceled, and claim 31 rewritten in independent amended form to incorporate the limitations of claims 29 and 30. Such cancellations of and amendments to claims are only for the purpose of expediting the prosecution of this application and are not to be construed as an abandonment of any of the novel concepts disclosed therein.

1. The courtesy of the Examiner in approving the drawings is acknowledged with appreciation.

2. The objection to the drawings because reference characters 20 and 22 have been used to designate both angles and speakers is noted. The transducers have been redesignated 20' and 22' in the description and drawings, as indicated in red in the sketch of FIG. 6.

3. The courtesy of the Examiner in withdrawing the previous objections under 35 U.S.C. 112 is acknowledged with appreciation.

4. Claim 4-8 stand rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter regarded as the invention. Claim 4 is said to recite the limitation "said automobile seat" in the eighth line of the claim, and there is said to be insufficient antecedent basis for this limitation in the claim. Claim 4 has been amended by deleting "automobile" so that there is now submitted to be appropriate antecedent basis for "seat". Accordingly, withdrawal of the rejection of claims 4-8 as indefinite is respectfully requested.

5. Claims 29-31 stand rejected under 35 U.S.C. §112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter regarded as the invention. Claim 29 is said to include the limitation "a rear behind set first and second front seats". Claims 29-30 have been canceled, and claim 31 rewritten in independent form to call for a passenger compartment rear portion behind said first and second front seats. Accordingly, withdrawal of the rejection of claim 31 as indefinite is respectfully requested.

6. Claims 13-17 stand rejected under 35 U.S.C. §102(b) as being anticipated by Boinais. The reference is said to disclose an arrangement for equipping a vehicle seat with loudspeakers. FIG. 1 is said to disclose a standard vehicle seat comprising a base 2, a back support 3 and a head rest 5. The overall device is said to read on a sitting device and the back support 3 is said to read on a back portion having an upper surface. As said to be shown in FIG. 1 speakers 8 are said to be mounted in an upper facing manner on the top of the back support 3. FIG. 2 is said to illustrate the horizontal relationship between a user's head and the two speakers 8. These speakers and their orientation are said to read on an electroacoustical transducer mounted in the upper surface along an axis and oriented to radiate substantially upward from the upper surface, with specific reference to the included translation, particularly the second page, in regard to the details of the components and the reference characters cited in this set of rejections. Regarding claim 14, the seat illustrated in the reference is said to be specifically a vehicle seat, with specific reference to the title of the reference, page 1, line 1, and is said to read on said sitting device is an automobile seat, with specific reference to the paragraph that begins Figures 1 and 2. Regarding claim 15, Figure 1 is said to clearly illustrate the automobile seat having a head rest 5, which is said to read on said automobile seat comprises a head rest, with specific reference to the paragraphs that begin this seat includes and this head-rest. Regarding claim 16, FIG. 1 is said to illustrate that the back support 3, of the vehicle seat includes two transducers 8. This is said to read on a second electroacoustical transducer mounted in said upper surface along an axis and oriented to radiate upward from the upper surface, with specific reference to the paragraph that begins in addition. Regarding claim 17, FIG. 2 is said to clearly illustrate a user's head 6 being positioned between the two speakers 8, which is said to read on said first transducers positioned to the left of a user's normal head position and said second transducer is positioned to the right of said user's normal head position. This ground of rejection is respectfully traversed.

We rely on the authority set forth on pages 10 and 11 of the response filed January 12, 2004.

Claims 13-17 have been amended to recite that the electroacoustical transducer is mounted so that the ears of a listener seated in the sitting device are non-axial with the axis. The

loudspeakers of the reference are oriented "towards the area of the user's head, so that the sounds emitted by the aforementioned loudspeakers can appreciably directly reach the user's ears 9, according to the direction of arrows 10." The reference thus discloses the ears of the listener lie substantially along the axis of the loudspeakers so the arrangement of the reference has the same disadvantage as the prior art seat back transducers shown in FIGS. 3A-3C of this application. Since the speakers of the reference are positioned so that the ears lie on the axis of the transducers, a slight rotation of the listener's head causes the ears to be non-axial with the axis of the transducers, causing a shift of the left-right balance of the sound, especially at high frequencies as described in this application on pages 3 and 9-11. Accordingly, withdrawal of the rejection of claims 13-17 as anticipated by the reference is respectfully requested.

7. Claims 18 and 20 stand rejected under 35 U.S.C. §102(b) as being anticipated by Klayman. The reference is said to disclose a method for improving the perception of sound source imaging in a multi-channel loudspeakers speaker system. FIG.8 is said to illustrate an embodiment of the invention wherein the improvement is applied to the audio system of the vehicle interior. A plurality of passengers D, P1-P4 are said to be shown each of which is seated in the vehicle, wherein the overall audio system is thus said to read on an automobile audio system for an automobile having a passenger compartment having a plurality of seats, with specific reference to column 8, lines 35-48 and column 9, lines 49-57. The audio source applied to the audio system in FIG. 8 is said to include a number of components 10, 12, 14, 18, for deriving a total of three audio signals including one sum and two difference channel signals, with specific reference to column 3, lines 16-33 and column 9, lines 8-48. The multiple channel output of these collective components is said to read on a first audio signal source having a plurality of output channels, said plurality of channels including a surround output channel. The difference channels are said to be known in the art as surround channels, and the reference is said to particularly cite their reverberation simulation qualities, wherein the output sound is said to represents an incoming audio signal from a direction different than that of the original sound source, with specific reference to column 3, lines 21-33. Each of the passengers is said to be exposed to a similarly positioned, wide diffusion-type speaker 110, 120, 146, that is said to emit

one of the difference signals with specific reference to column 7, lines 42-68 and column 9, lines 4-67. These speakers are said to read on a plurality of substantially identical electroacoustical transducers for radiating sound waves corresponding to the surround channel. As said to be illustrated in FIG. 8, each of these speakers is said to be positioned facing the area in which each of the passenger's knees are located when the passengers are in a seated position, and each of these speakers are said to be positioned to the left of this area for each passenger. This is said to read on wherein said plurality of electroacoustical transducers are positioned in said passenger compartments such that each of the plurality of seats are positioned substantially identically to and in the direct field of one of the plurality of electroacoustical transducers. The reference of Gates is said to have been included with this action to substantiate the position that these difference signals are known in the art as surround-type signals, with specific reference to column 4, lines 56-63 of Gates.

Regarding claim 20, FIG. 8 is also said to illustrate a group of speakers 118, 112, 148, that emit the other audio difference signal from the right of each passenger, with specific reference to column 9, lines 4-67. These speakers are said to read on a second plurality of substantially identical electroacoustical transducers. The audio source applied to the amplifier of the speaker is said to include three signals, a sum and two difference signals. The difference groups of speakers cited are said to emit the different signals, represented as L-R and R-L. These different signals and their original left and right channel basis signals are said to read on said first audio signal source comprising a left surround output channel and a right surround output channel. Figure 8 illustrates that the first cited group of speakers 110, 120, 146, each emit the left reverberant, or L-R, difference signal and the second group of the above cited speakers emit the right reverberant, or R-L, difference signal, with specific reference to column 4, lines 63-66. This is said to read on said first plurality of transducers are for radiating sound waves corresponding to signals corresponding to said left surround output channels and wherein said second plurality of transducers are for radiating signals corresponding to said right surround output channel. Each of the second cited above speakers of the second group are said to be symmetrically positioned opposite of each of the speakers in the first group, centered around the

leg compartment areas of the front seats and back seat of the passenger compartment, with specific reference to column 8, lines 35-48 and column 9, lines 49-68 and column 10, lines 1-22. This is said to read on each of the seats being positioned substantially identical to, in the direct field of, one of said first plurality of electroacoustical transducers and substantially identical to, and in the direct field of one of the second plurality of electroacoustical transducers.

This ground of rejection is respectfully traversed as applied to claims 18 and 20 as amended. Claim 18 has been amended to recite that the seats are positioned forward of one of the plurality of electroacoustical transducers radiating sound waves corresponding to the surround channel. The system of the reference includes speakers that are positioned in front of the seats. Audio systems with surround channels are typically arranged so that the surround channels are radiated, or appear to be radiated, from behind the listener, for example as in the Gates reference, which the Examiner appears to be citing as a secondary reference. The Klayman reference employs a different signal for different purpose; namely, to represent the reverberant field of a stereophonic audio system. There is therefore no suggestion of any desirability of modifying what is disclosed in Klayman to position the speakers behind the seats.

Claim 20 has been amended to recite that these seats are positioned forward of one of the plurality of electroacoustical transducers radiating sound waves corresponding to the second surround channel. The system of the reference includes speakers that are positioned in front of the seats. Audio systems with surround channels are typically arranged so that the surround channels are radiated or appear to be radiated from behind the listener, for example, as in the Gates secondary reference, not expressly relied upon for rejecting claims 18 or 20. The Klayman reference employs a different signal for a different purpose; namely, to represent the reverberant field of a stereophonic audio system. There is therefore no disclosure or suggestion in the reference of the desirability positioning the speakers behind the seats.

Accordingly, withdrawal of the rejection of claims 18 and 20 as anticipated by Klayman is respectfully requested.

8. Claims 1, 2, 4-5 and 12 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Wiseman as a primary reference in view of Klayman as a secondary reference. The primary

reference is said to disclose a stereophonic headrest 10 that comprises a central 12 and two angled end pieces 14, 16, with specific reference to column 1, lines 59-66. The headrest is said to be described as particularly being for an automobile seat, with specific reference to column 1, lines 13-16. The backrest 18 and headrest 10 are said to collectively read on a seat having a seat back. Speakers 48, 50 are said to be mounted on opposite ends of the headrest 10, and are said to emit a stereophonic signal, with specific reference to column 2, lines 12-17 and 23-33. The placement of these speakers 48, 50, inside the end portions is said to read on an electroacoustical transducer mounted in said seat back. The source of the audio for the speakers 48, 50, is not shown but is said to be inherently connected to the speaker in some manner. The primary reference is said to illustrate a pair of lead electrical wires 53, 55, for coupling volume control knobs 52, 53, to the speakers 48, 50, for coupling volume control knobs 52, 53, to the speakers 48, 50 with specific reference to column 2, lines 29-33. The stereophonic sound source, which does not appear to be shown in the primary reference, is said to read on a first audio source having a plurality of channel signals. What are said to be the inherent connections to the stereophonic sound source are said to read on electronic circuitry coupling said first audio source and said electroacoustical transducer. The primary reference does not disclose that the audio source includes multiple channels wherein one is a surround channel and that this surround channel is connected to the transducer. The secondary reference is said to disclose a method for improving the image of a sound source. The audio in the secondary reference is said to involve sum and difference signals applied to speakers specifically placed around the passengers in the vehicle. The secondary reference is said to also disclose an embodiment for a theatre wherein a rear stereophonic left and right signals are produced with specific reference to column 6, lines 53-58. The overall number of signals supplied for output, such as for the input to the amplifier 7 in FIG. 1, along with the plurality of signals produced for the system of FIG. 7 is said to read on a first audio source having a plurality of audio channel signals, the plurality of audio channel signals including a surround channel signal. The difference signals applied to the left and right speakers 110 and 118, 120, and 112, 146 and 148, are said to be reverberant. The similar versions of these signals for the rear stereophonic signals, (L-R)<sub>R</sub> and (R-L)<sub>R</sub>, are said to be

particularly emitted at the behind seating areas 62, 64, with specific reference to columns 6, lines 47-58. Both of these teachings, in view of the speaker placement of the primary reference are said to read on for transmitting said channel signal to said electoracoustical transducers.

To one of ordinary skill in the art at the time the invention was made, it is said it would have been obvious to implement the vehicle speaker system of the primary reference to multiple seats in a vehicle and with the improved imaging circuitry of the secondary reference. More specifically, the teachings of the secondary reference are said to provide motivation for emitting the basic difference signals of FIG. 8 from the headrest speakers because of the improved transmission to a user's ears, as said to be taught by the primary reference. The teachings of the secondary reference it is said would also provide motivation for emitting the alternate, rear stereophonic signals of FIG. 7 because of the rearward positioning of such speakers as said to be taught by the primary reference. The motivation behind combining the teachings of these two references in such manner it is said would have been the net improvement of the sound received and imaged for each individual user in the audio environment, based on the combination of the nearness and location of such speakers and the qualities of the signals being emitted. This motivation is said to be derived from the relevant teachings of both primary and secondary references.

Regarding claim 2, the speakers 48, 50 of the primary reference are said to be located in the ends 14, 16 of the headrest 10, which is said to reads on said seat back comprises a headrest, and wherein said electroacoustical transducers is mounted in said headrest with specific reference to column 2, lines 23-36.

Regarding claim 4, the primary and secondary references are said to disclose in substance what is said to be disclosed in connection with rejecting claim 1. Regarding claim 12, the headrest of the primary reference is said to be described as particularly being for an automobile seat which is said to read on said seat is an automobile rear with specific reference to column 1, lines 13-16 of the primary reference.

These grounds of rejection are respectfully traversed. We rely on the authority set forth on pages 16 and 17 of the response filed January 12, 2004.

Applicant : Douglas J. Holmi  
Serial No. : 09/532,907  
Filed : March 21, 2000  
Page : 16 of 20

Regarding claim 1, nothing in the references suggest the desirability of combining what is there disclosed for meeting the limitations of claim 1 and claims 2, 4, 5 and 12 dependant thereon. The primary reference discloses no speakers other than the headrest speakers. The secondary reference discloses emitting sound waves representing both a direct sound field corresponding to the L+ R signal and a reverberant sound signal corresponding to the L-R and R-L signals. Emitting the L-R and R-L signals disclosed by the secondary reference from a headrest speaker would destroy the purpose of the secondary reference in producing a spatial acoustical field more realistically representative of a live performance because the sound waves representing the reverberant field would be loudspeakers and arrive sooner than the sound waves representing the direct field and detracts from the realistic representation of a live performance where the sound sources are typically far from the listener. In *Ex parte Sternau*, 155 U.S.P.Q. 733, 735 (Bd. of Appeals 1967) the Board said:

However, there is nothing in the disclosures of [primary reference] Young and [secondary reference] Haslacher that would teach the Examiner's proposed combination or any reason for making it. In fact, the proposed combination would destroy the Young apparatus for its intended purpose. Thus, we will reverse the rejection of claims 44 and 45 for this reason.

Accordingly, withdrawal of the rejection of claims 1, 2, 4, 5 and 12 as unpatentable over the primary and secondary references is respectfully requested. If this ground of rejection is repeated, the Examiner is respectfully requested to quote verbatim the language in each reference regarding as corresponding to each limitation in these claims, and quote verbatim the language in the references regarded as suggesting the desirability of combining what is there disclosed to meet the limitations of these claims.

9. Claim 1, 3-6, 9, 12 and 22 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Boinais as a primary reference in view of Klayman as a secondary reference. This ground of rejection is not understood. While purporting to reject these claims on Boinais as a primary reference in view of Klayman as a secondary reference, the rejection repeatedly refer to speaker placement of Wiseman. These claims were rejected on this combination of references in the prior office action, and we pointed out the failure of the references to properly serve as a



Applicant : Douglas J. Holmi  
Serial No. : 09/532,907  
Filed : March 21, 2000  
Page : 17 of 20

basis for rejecting these claims on pages 17 and 18 of the response filed January 12, 2004. If this ground of rejection were repeated the Examiner was respectfully requested to quote verbatim the language in each reference regarded as corresponding to each limitation in each of these rejected claims, and quote verbatim the language in the references regarded as suggesting the desirability of combining what is there disclosed to meet the terms of these claims. The Examiner did not and can not comply with this request. Accordingly, if this ground of rejection is again repeated, the Examiner is again respectfully requested to quote verbatim the language in the primary and secondary references regarded as corresponding to each limitation in these claims, and quote verbatim the language regarded as suggesting the desirability of combining what is there disclosed to meet the limitations of these claims.

10. Claims 7, 8, 10, 11, 23 and 25-28 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Boinais as a primary reference in view of Klayman as a secondary reference and further in view of Yoshino as a tertiary reference. This ground of rejection is respectfully traversed.

This ground of rejection was overcome on page 21 of the response filed January 12, 2004. If this ground of rejection were repeated, the Examiner was respectfully requested to quote verbatim the language in the references regarded as corresponding to each element in each rejected claim, and quote verbatim the language in the references regarded as suggesting the desirability of combining what is there disclosed to meet the terms of each rejected claim. The Examiner did not and can not comply with this request. If this ground of rejection is again repeated, the Examiner is again respectfully requested to quote verbatim the language in each reference regarded as corresponding to each limitation in each rejected claim and quote verbatim the language in the references regarded as suggesting the desirability of combining what is there disclosed to meet the limitations of these claims.

11. Claims 19 and 21 are again rejected under 35 U.S.C. §103(a) as being unpatentable over Klayman as a primary reference as applied to claims 18 and 20 and further in view of Yamada as a secondary reference. We overcame this ground of rejection on pages 22 and 23 of the response filed January 12, 2004. If this ground of rejection were repeated, the Examiner was

Applicant : Douglas J. Holmi  
Serial No. : 09/532,907  
Filed : March 21, 2000  
Page : 18 of 20

respectfully requested to quote verbatim the language in each reference regarded as corresponding to each element in each of these claims, and quote verbatim the language in the references regarded as suggesting the desirability of combining what is there disclosed to meet the terms of these rejected claim. The Examiner did not and can not comply with this request. Accordingly, withdrawal of the rejection of claims 19 and 21 as unpatentable over these references is respectfully requested. If this ground of rejection is repeated the Examiner is again respectfully requested to quote verbatim the language in the references regarded as corresponding to each element in these rejected claims, and quote verbatim the language in the references as suggesting the desirability of combining what is there disclosed to meet the limitations of these claims.

12. Claim 31 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Imai as a primary reference in view of Klayman as a secondary reference. Claim 31 has been rewritten in independent form incorporating the limitations of claims 29 and 30.

The Examiner asserts that the primary reference discloses in FIG.8 each passenger receiving a narrow center channel signal from a local speaker 114, 116, 140, 142, except for the rear, center passenger and that FIG. 11 of the primary reference teaches that the same mixture of signals may be used with left and right channel signals, wherein the mixed signal is emitted from a centrally positioned speaker in reference to a user's position, with specific reference to column 6, lines 52-64. It is said that in combining a rearward facing, center speaker between the two systems it would have been obvious to one of ordinary skill in the art at the time of the invention to emit a center (L+R) signal from this centrally located speaker. This ground of rejection is respectfully traversed. Nothing in the references suggest the desirability of combining what is disclosed in the primary and secondary references. The center speaker in FIG. 14 of the primary reference is not remotely suggested for incorporation into the secondary reference.

Furthermore, even if the disclosure of the secondary reference were incorporated into the disclosure of the primary reference, the combination would not yield the vehicle sound system of claim 31. The primary reference in FIGS. 14 and 15 discloses left channel front and rear main speakers 316FL and 316RL installed along the central axes of the vehicle compartment, with

Applicant : Douglas J. Holmi  
Serial No. : 09/532,907  
Filed : March 21, 2000  
Page : 19 of 20

specific reference to column 9, lines 1-4 and that the front and rear main speakers 316FL and 316RL are directed with their acoustical axis substantially along the central axis of the vehicle compartment, with specific reference to column 9, lines 19-22. There is no disclosure of radiating any signal other than the left signal from front and rear main speakers 316FL and 316RL. The primary reference also discloses that the main speakers 316 are arranged so that for each seat occupant, the nearest pair of left-and-right channel speakers located in front of the occupant are approximately equidistant from the occupant. To summarize, the primary reference discloses radiating the left channel from the speaker placed along the central axis of the vehicle compartment for reasons that the speakers radiating the left and right channels are equidistant from the user. Radiating a center channel from the speakers along the central axis would be contrary to the function of what the primary reference discloses and would also be contrary to the reason for the configuration of the primary reference. Accordingly, withdrawal of the rejection of claim 31 is respectfully requested.

If this ground of rejection is repeated, the Examiner is respectfully requested to quote verbatim the language in the references regarded as corresponding to each limitation in the claim, and quote verbatim the language in the reference regarded as suggesting the desirability of combining what is there disclosed to meet the limitations of claim 31.


Applicant : Douglas J. Holmi  
Serial No. : 09/532,907  
Filed : March 21, 2000  
Page : 20 of 20

In view of the forgoing cancellations, amendments, authorities, remarks and inability of the prior art alone or in combination, to anticipate suggest or make obvious the subject matter as a whole of the invention disclosed and claimed in this application, all the claims are submitted to be in a condition for allowance, and notice thereof is respectfully requested. Should the examiner believe the application is not in a condition for allowance, the Examiner is respectfully requested to telephone the undersigned attorney at 617-521-7014 to discuss what addition steps the Examiner believes are necessary to place the application in a condition for allowance.

Respectfully submitted,

FISH & RICHARDSON P.C.

Date: OCT - 7 2004

  
Charles Hieken  
Reg. No. 18,411  
Attorneys for Application Owner

Fish & Richardson P.C.  
225 Franklin Street  
Boston, MA 02110-2804  
Telephone: (617) 542-5070  
Facsimile: (617) 542-8906  
Encl: FIG. 6 sketch